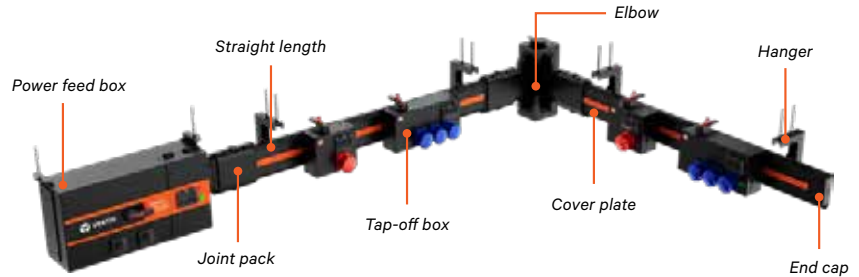# Vertiv™ PowerBar iMPB

Intelligent medium-power bar

Overview

The PowerBar iMPB (Intelligent Medium-Power Bar) is designed to meet the evolving needs of expanding data centers. It offers scalable power distribution, high reliability, and rapid deployment capabilities, minimizing downtime and maximizing space utilization. The user-friendly interface and streamlined maintenance process simplify operation and maintenance, reducing complexity and costs. By providing a flexible and scalable power distribution solution, the PowerBar iMPB allows facilities to adapt to emerging technologies and increasing power demands without significant infrastructure changes. This makes it an invaluable asset for next-generation data center power distribution.

Vertiv™ PowerBar iMPB system diagram

Applications

IDC data rooms in finance, telecom, government and IT industries

AIDC (AI data center)

Industrial intelligent manufacturing production

Benefits

Enhanced operational safety

The PowerBar iMPB maintains arc-free activation with its "connect before power-on" mode. Its Class-B heat-resistant insulation material provides high reliability, while the IP42 protection level offers robust defense against solid objects and water splashes. With the ability to withstand short-time currents up to 36kA, it delivers exceptional performance even in demanding conditions.

High scalability

The tap-off box supports capacities up to 125A, accommodating single cabinet power needs ranging from 6 to 80kW. The PowerBar iMPB can expand its capacity as required, flexibly adapting to AI intelligent computing to provide stable power support.

Uninterrupted operation

With its 7x24 online mode, the PowerBar iMPB maintains continuous and stable system performance, even during maintenance, so your data center remains fully operational.

Easy to maintain

The primary and secondary loops are electrically isolated, allowing secondary circuits to be replaced and maintained online, enabling uninterrupted operation for users.

Features

Zero arcs

The VertivTM PowerBar iMPB ensures safe power-on with zero arcs, significantly reducing potential risks and enhancing overall safety. Its high reliability guarantees consistent performance.

Intelligent calculation

The system's AI-driven intelligent calculation adapts to various scenarios, providing the flexibility needed to meet diverse operational requirements.

Secondary online maintenance

The PowerBar iMPB supports a secondary power distribution loop, which allows for an uninterrupted power supply and stable operation during maintenance activities.

End-to-end safety

It incorporates advanced safety features such as arc fault detection and isolation to minimize risks, preventing electrical hazards, overheating, and potential system failures.
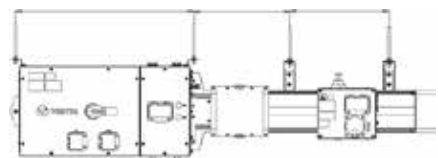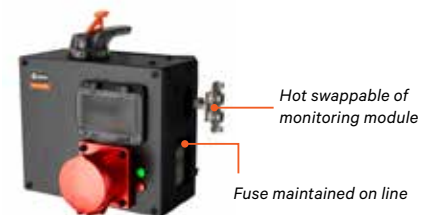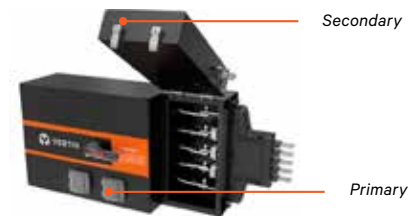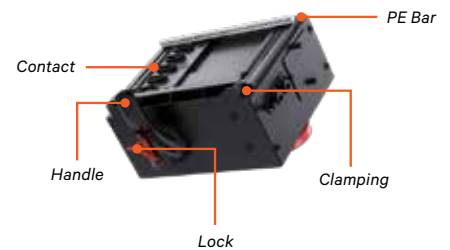
Interlocking design

The PowerBar iMPB features a mechanical and electrical interlocking design. The clamping mechanism of the tap-off box and busway ensures a secure connection. At the same time, the rotating operation handle allows for safe power-on, minimizing the risk of arcing and protecting maintenance personnel.

Flexible configuration

The tap-off box can be hot-swappable, plug-and-play, and can implement system expansion or power distribution design in the case of an uninterruptible power supply.

Space-saving

The system supports horizontal and vertical installation, allowing for flexible space utilization based on site limitations, thereby improving solution availability.

Busway

PE Bar

Contact

Handle

Clamping

Lock

Secondary

Primary

Hot swappable of monitoring module

Fuse maintained on line

Vertical: Minimum installation height of 600mm
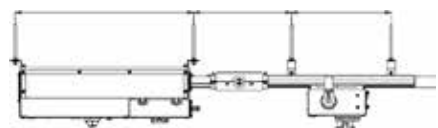
Horizontal: Minimum installation height of 800mm

Composition of Vertiv™ PowerBar iMPB

Power feed box

Function

- The power feed box serves as the main inlet for the power supply, providing electrical protection for the main circuit, monitoring electrical parameters, and offering lightning protection within the busway system.
- It consists of a hardware shell and internal insulation parts, with five terminals connected to phases A, B, C, N, and G of the busway. It includes a plastic shell switch, an intelligent instrument, and lightning protection.

Specification

- Capacity: 160A to 1000A.
- It can be equipped with a molded case circuit breaker (MCCB).

Features

- The primary loop can be repaired online, and the secondary loop can be replaced and maintained online.
- Compact design with a minimum size of 650mm (L) x 250mm (W) x 450mm (H).

Tap-off box

Function

- The tap-off box, also known as the terminal box, is a branch unit of the busbar used for distributing power to IT cabinets.
- It comprises a circuit breaker (CB), IEC socket, plug contact, clamping mechanism, and operating handle.
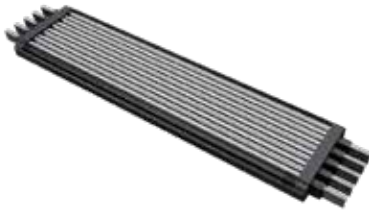
Specification

- Capacity: 16A to 125A.
- Available in single/three-phase configurations, with options for one-to-one, one-to-three, or one-to-six connections and industrial connector or cable wiring outputs.

Features

- Supports online replacement and maintenance of the secondary loop.
- Flexible and space-saving, with options for horizontal or vertical installation.
- The mechanical interlocking device ensures secure installation and removal.
- The online hot swap function allows for system expansion, load balancing, and power distribution design without interrupting the power supply.

Straight length

Function

- Facilitates upstream power transmission, carrying busbar current. It comprises a copper bar, insulating material, and metal shell.

Specification

- Capacity: 160A to 1000A.
- Length options: 1m, 2m, 3m.

Features

- It uses Class-B heat-resistant insulating material, capable of operating generally below 130°C.
- Short-time withstand current is up to 36kA, maintaining reliability and safety.
- The busway shell is made of high-strength aluminum alloy, resistant to scratches, salt spray, and corrosion.
- It adopts a 3-phase 5-wire system, each busbar made of high-purity electrolytic copper. The N bar section equals the phase bar, and the PE bar uses a separate copper bar, not the shell.

Joint pack

Function

- Connects two straight lengths of the busway.
- Each phase uses a sandwich structure with two clamped copper bars and high-strength, high-temperature insulation between them.
- It's comprised of copper bars, insulation parts, fixed profiles, and bolts.

Specification

- Capacity: 160-1000A.

Features

- Screw design prevents accidents from falling screws.
- There is no hole connection between copper bars for low impedance, making the system more energy-efficient and reliable.
- High-strength aluminum alloy shell with good heat dissipation and IP42 protection level.

Elbow

Function

- Connects straight lengths of the busway to accommodate different spatial directions.
- Available in inner and outer bends for 160-1000A busways

Hanger

Function

- Used for lifting the busway and fitting various data center cabinet top spaces.
- It can be installed horizontally or vertically.
- M10 unique screw design for easy leveling, with a maximum installation spacing of 1.5 meters.

Cover plate

Function

- Closes the busway opening.
- Made of insulating material, standard length of 3 meters, customizable to site needs.

End cap

Function

- Seals the end of the busway with internal insulation material.
- Compatible with the entire product series, allowing quick removal for busway extension.

Full life cycle monitoring

As data centers increase power distribution density and capacity efficiency, the Vertiv™ PowerBar iMPB offers comprehensive lifecycle monitoring to detect operational anomalies before they impact power continuity.

Features

- **Monitoring system:** Integrated in both the power feed box and tap-off box.
- **Main monitoring box:**

  - Internal: RS485 communication interface and Modbus-RTU protocol.
  - External: RJ45 network port and SNMP protocol for connecting to the dynamic environment monitoring system and uploading data.

- **Hand-in-hand connection:** One main monitoring box can monitor up to 4 busbars and the electrical parameters of each tap-off box output loop.

Main monitoring box

Schematic diagram of busbar communication

System display

- **Editable on-site configuration:** 13.3-inch touch screen with a graphical single-line diagram display.
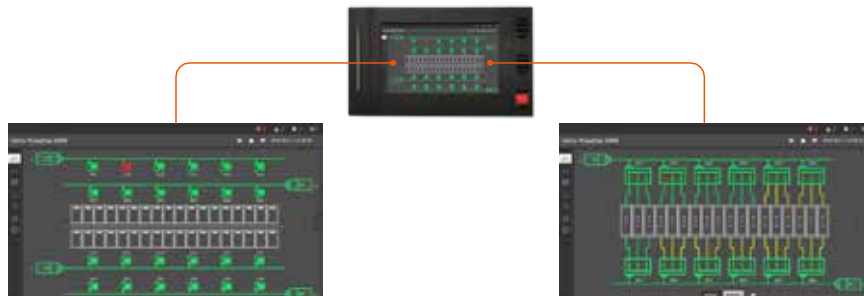
Vertiv™ PowerBar iMPB monitoring interface

Electrical parameter monitoring

Main output monitoring function:

- Three-phase voltage and voltage harmonics.
- Three-phase current, current percentage, current harmonics, and neutral current.
- Active power, reactive power, apparent power, and power factor.

Branch output monitoring function:

- Rated current, current percentage, and current harmonic percentage.
- Active power, reactive power, apparent power, and power factor.
- Electricity (measured over time) and switch status.
- Frequency and electricity (measured over time).

Temperature detection

- Provides real-time temperature data of the busbar system via RS485 communication interface and Modbus-RTU protocol.
- Includes temperature detection at the input side, output side, and busbar connection (optional).

Energy consumption management

- Precise distribution of energy consumption, identifying energy waste, and saving potential.
- Total energy consumption system statistics.
- Energy consumption statistics for each branch.
- System power efficiency.

Intelligent operation and maintenance

- Level 3 fault alarm and fast fault location.
- Optional report and statistics function: Generates monthly and annual electricity consumption reports for easy query and statistics.
- Capacity management: The main loop and each branch can set two threshold alarm functions with adjustable alarm thresholds.
- Fault diagnosis: Provides alarms for overload, overvoltage, undervoltage, phase failure, power failure, high current threshold, excessive input instantaneous current, excessive temperature, and internal communication failure.
- Supports remote alarm output and audible & visual alarm functions on the LCD screen.

Technical Data

Vertiv™ PowerBar iMPB -AC series

Rated operating current	160A	250A	400A	630A	800A	1000A
Rated operating voltage	AC380/400/415V					
Rated insulation voltage	1000V					
Rated frequency	50/60Hz					
Rated impulse withstand voltage	8kV Tap-off box 6kV					
Rated short time withstand current	20 ~40kA/1s					
Output switch capacity	16~125A					
Allowable value of electrical clearance	≥8mm					
Allowable creepage distance	≥16mm					
Protection level	IP54 (without tap-off unit) / IP42, IP40 (with tap-off unit)					
Heat resistance grade of insulating material	Class B					
Installation mode	Vertical / horizontal installation					
Local display	13.3-inch touch screen optional					
Protocol	Modbus- RTU protocol or SNMP protocol					
Power feed box dimension (L*W*H mm)	650*250*450		700*250*450	850*250*450	1000*320*450	
Altitude	≤2000m					
Operating temperature	-5°C~40°C					
Operating humidity	10%~90%					

Vertiv™ PowerBar iMPB -DC series

Rated operating current	250A	400A	630A	800A	1000A	1250A
Rated operating voltage	DC240/336V					
Rated insulation voltage	660/1000V					
Auxiliary insulation voltage	500V					
Rated impulse withstand voltage	8kV Tap-off box 6kV					
Rated short time withstand voltage	20 ~30k A/1s					
Output switch capacity	16~125A					
Allowable value of electrical clearance	≥8mm					
Allowable creepage distance	≥16mm					
Protection level	IP54 (without tap-off unit) / IP42, IP40 (with tap-off unit)					
Heat resistance grade of insulating material	Class B					
Installation mode	Vertical / horizontal installation					
Local display	13.3-inch touch screen optional					
Altitude	≤2000m					
Operating temperature	-5°C~40°C					
Operating humidity	10%~90%					